

REMARKS

By this amendment claims 9-12 have been cancelled and no claims have been amended. Accordingly, claims 1-8 and 13-22 remain pending in this application. No new matter has been added. Applicant requests the prompt re-examination and allowance of this application.

Claim Objections

In the Office Action mailed January 17, 2006 ("the Office Action"), claim 8 was objected to for allegedly having insufficient antecedent basis for "a second impact absorbing device" because there is no mention of a first impact absorbing device in claim 8 or claim 1, from which claim 8 depends. Applicant respectfully submits that the term "second impact absorbing device" is reasonably ascertainable. A claim is not indefinite if the scope of the claim is reasonably ascertainable by one skilled in the art. See e.g. MPEP § 2173.05(e). The failure to provide explicit antecedent basis for a term does not automatically render the claim indefinite. See e.g. *Id.* Accordingly, Applicant respectfully submits that one of skill in the art would reasonably ascertain that the term "second impact absorbing device" refers to an "impact absorbing device" referred to in claim 8 as "second." That is, the term does not require a "first impact absorbing device" in order to reasonably ascertain its meaning as an impact absorbing device. As such, Applicant respectfully requests the objection to claim 8 be withdrawn.

Obviousness Rejections

In the Office Action, claims 1-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,708,101 to Hara et al. ("Hara") in view of U.S. Patent No. 4,084,557 to Luria ("Luria"). The rejection of claims 9-12 is moot in view of

these claims being canceled herein. Applicants respectfully traverse the rejection of claims 1-8 and 13-22. A proper *prima facie* case of obviousness requires three elements: (1) there must be a suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference; (2) there must be a reasonable expectation of success; and (3) the prior art reference (or references when combined) must teach or suggest all the claim limitations. See MPEP § 2142.

Hara discloses in Figs. 8(A) to 10 and line 34 of column 4 to line 36 of column 5, a driving apparatus for an engine valve including a driving cam 13 fixed to a cam shaft 14, a rocker arm 15, one end of which contacts the driving cam 13 and the other end of which engages an intake valve 12. Hara also discloses a lever 16 which engages a control cam 17 and contacts the back surface of the rocker arm 15 to create a fulcrum. During operation of the driving apparatus, rotation of the driving cam 13 pivots the rocker 15 about the fulcrum to lift the intake valve 12. Rotation of the control cam 17 moves the lever 16 to adjust the position of the fulcrum of the rocker arm. Adjusting the position of the fulcrum serves to vary the amount of displacement of the rocker arm 15 caused by the driving cam 13 and thus affects the extent of movement of the intake valve 12.

Luria discloses in line 66 of column 3 to line 12 of column 4 and in Fig. 1, an internal combustion engine including an intake valve 8, a first cam 12, and a second cam 34, wherein the first cam 12 controls the opening of the valve 8 and the first and second cams 12, 34 control the closing of the valve 8. The first cam 12 opens the valve 8 by overcoming a spring biasing the valve 8 to a closed position via a push rod 18 and

a rocker arm 20. See Fig. 1 of Luria. The second cam 34 engages the rocker arm 20 when its rotational phase is shifted out of phase with that of the first cam 12 and overcomes the spring bias urging the valve 8 to the closed position. Luria further discloses in lines 13 to 54 of column 4 and in Fig. 2, an arrangement for driving a cam shaft 32 of the second cam 34 and adjusting the rotational phase of the second cam 34 with respect to the first cam 12.

Regarding independent claim 1, the alleged combination of Hara in view of Luria improperly establishes a *prima facie* case of obviousness for, *inter alia*, a valve actuation system comprising an engine valve moveable between a first position and a second position, a cam follower having a fixed pivot, a first cam adapted to engage the cam follower to move the engine valve, and a second cam adapted to engage the cam follower to affect movement of the engine valve. As set forth above, Hara discloses that the lever 16 and not the control cam 17 engages the rocker 15 and that the fulcrum of rocker arm 15 is adjusted by control cam 17. Furthermore, Hara explicitly discloses that the fulcrum therein is varied to control the variability of the lift characteristic of the engine valve 12. See lines 46-50 of column 1, lines 43-58 of column 4, lines 24-48 of column 6 of Hara.

Because Hara explicitly discloses a variable pivot, any modification thereto, in view of the teachings of Luria, to include a fixed pivot, would render the apparatus disclosed in Hara unsatisfactory for its intended purpose, e.g., a fixed pivot would destroy the variability of the lift characteristic. Rendering an apparatus unsatisfactory for its intended purpose establishes that there is no suggestion or motivation to make the proposed modification. See MPEP 2143.01 V. Similarly, the proposed modification

would change the principle operation of the apparatus of Hara, e.g., eliminating the variability of the lift characteristic. Teachings that change the principle operation of a reference are insufficient to render the claims *prima facie* obvious. See MPEP § 2143.01 VI. As such, the proposed modification to the disclosure of Hara in view of that of Luria does not properly establish a *prima facie* case of obviousness because there is no suggestion to make the proposed modification of Hara. See MPEP § 2142. Accordingly, Applicant submits that independent claim 1 is allowable for at least this reason. Claims 2-8 depend from claim 1 and are also allowable for this reason as well as for their additional features.

Regarding independent claim 13, the alleged combination of Hara in view of Luria improperly establishes a *prima facie* case of obviousness for, *inter alia*, a valve actuation system comprising an engine valve, a cam follower having a pivot, a first cam adapted to engage the cam follower and rotate the cam follower in a first direction about the pivot, and a second cam adapted to engage the cam follower and rotate the cam follower in a second direction opposite the first direction about the pivot. Hara explicitly discloses that the control cam 17 moves the lever 16 to adjust and establish the position of the fulcrum, that is, the control cam 17 cannot rotate the rocker arm 15 about the pivot. Thus, Hara does not disclose first and second cams adapted to engage the cam follower and rotate the cam follower about a pivot in opposite directions as recited by independent claim 13. Similarly, Luria discloses that the first cam 12, via the push rod 18, and the second cam 34 each rotate the rocker arm 20 to overcome the spring bias on the valve 8. That is, both the first and second cams 12, 34 rotate the rocker arm about the pivot in the same direction. Thus, Luria does not disclose first and second

cams adapted to engage the cam follower and rotate the cam follower about a pivot in opposite directions, as recited in independent claim 13.

Because Luria discloses that both the first and second cam are adapted to rotate the cam follower in the same direction about a pivot, any modification of Hara in view of Luria will not teach or suggest all the claim limitations. That is, the reasonable teachings of Luria are limited to first and second cams rotating a cam follower about a pivot in the same direction. As such, the proposed combination of Hara and Lura improperly establishes a *prima facie* case of obviousness because the combination of Hara in view of Luria does not teach or suggest all of the claim limitations. See MPEP § 2142. Accordingly, Applicant submits that claim 13 is allowable for at least this reason. Claims 13-15 depend from claim 13 and are also allowable for this reason as well as for their additional features.

Regarding independent claim 16, the alleged combination of Hara in view of Luria improperly establishes a *prima facie* case of obviousness for, *inter alia*, an engine including an engine valve, a cam follower, a first cam adapted to engage the cam follower such that rotation of the first cam acts to move the engine valve from a first position to a second position, and a second cam adapted to selectively engage and disengage the cam follower such that the rotation of the second cam acts to affect the movement of the engine valve as recited in independent claim 16. Hara discloses that the control cam 17 adjusts the position of lever 16 to vary the position of the fulcrum and that the control cam 17 does not engage the rocker arm 15. Thus, Hara does not disclose a second cam adapted to selectively engage and disengage the cam follower. Additionally, Hara explicitly discloses that the fulcrum therein is varied, by the control

cam 17, to control the variability of the lift characteristic of the engine valve 12. See lines 46-50 of column 1, lines 43-58 of column 4, lines 24-48 of column 6 of Hara. It is noted that Luria discloses the first cam 12 affecting movement of the rocker arm 20 via the non-rotating push rod 18. Thus, Luria does not disclose a first cam adapted to engage a cam follower such that rotation of the first cam acts to affect movement of the engine valve.

Because Hara explicitly discloses that the variable fulcrum, as established by control cam 17, controls the variability of the lift characteristic, any modification thereto, in light of the teachings of Luria, to include a second cam to selectively engage and disengage the cam follower would render the apparatus disclosed in Hara unsatisfactory for its intended purpose. That is, modifying the control cam 17 of Hara to disengage the lever 16 would eliminate the fulcrum of the rocker arm 15 and without a fulcrum the drive cam of Hara could not lift the intake valve. Rendering an apparatus unsatisfactory for its intended purpose establishes that there is no suggestion or motivation to make the proposed modification. See MPEP 2143.01 V. Similarly, the proposed modification would change the principle operation, e.g., destroy the variability lift characteristic, of the apparatus of Hara. Teachings that change the principle operation of a reference are insufficient to render the claims *prima facie* obvious. See MPEP § 2143.01 VI. As such, the proposed modification to the disclosure of Hara in view of that of Luria does not properly establish a *prima facie* case of obviousness because there is no suggestion to make the proposed modification of Hara. See MPEP § 2142. Accordingly, Applicant submits that independent claim 16 is allowable for at

least this reason. Claims 17-22 depend from claim 16 and are also allowable for this reason as well as for their additional features.

Conclusion

Applicant respectfully requests the reconsideration of the rejections set forth in the Office Action in light of the remarks set forth above, and requests entry of this Amendment under 37 C.F.R. § 1.116, which place claims 1-8 and 13-22 in condition for allowance. Applicant submits that claims 9-12 have been canceled and no amendments to claims 1-8 and 13-22 have been made. Accordingly, this Amendment does not raise new issues or necessitate the undertaking of any additional search of the art by the Examiner, because all of the elements and their relationships claimed were either earlier claimed or inherent in the claims as examined. Therefore, this Amendment should allow for immediate action by the Examiner.

Furthermore, Applicant respectfully points out that the Office Action applied new art references against Applicant's invention in response to Applicant's previous amendments. It is respectfully submitted that the entering of this Amendment would allow the Applicant to reply to the final rejections and place the application in condition for allowance.

Finally, Applicant submits that the entry of the Amendment would place the application in better form for appeal by canceling claims 9-12, should the Examiner dispute the patentability of pending claims 1-8 and 13-22.

In view of the foregoing remarks, Applicant submits that the claimed invention is not anticipated nor obvious in view of the prior art references cited against the claims. Applicant therefore requests the entry of this Amendment, the Examiner's

reconsideration and reexamination of the application, and the timely allowance of the pending claims.


The Office Action contains characterizations of the claims and the related art, with which Applicant does not necessarily agree. Unless expressly noted otherwise, Applicant declines to subscribe to any statement or characterization in the Office Action.

If the Examiner believes a telephone conversation might advance prosecution, the Examiner is invited to call Applicant's undersigned representative at 202-408-4397.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account no. 06-0916.

Respectfully submitted,
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